Metal impact on benthic populations within the Baie des Chaleurs, New Brunswick: a reconnaissance review of marine geochemistry and species diversity

Ryan Campbell[1], David Scott[1], and Ray Cranston[2]
[1]Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia B3H 3J5, Canada
[2]Bedford Institute of Oceanography, Dartmouth, Nova Scotia B2Y 4A8, Canada

Recently, the Restigouche esturarian system has been serving as both a transport and dispersal mechanism for base metals, trace elements (Cd, Hg, As), organic matter, and other suspended particulate within the Baie des Chaleurs. High frequency sampling within the bay produced representative gravity core, which were subsampled and processed to determine benthonic foraminiferal abundance and diversity together with associated geochemistry. Two cores, representing both inner and outer estuarine locations, divide and highlight a boundary zone of foraminiferal speciation, metal plumes, marine current and wind input, freshwater discharge, suspended particulate input, and organic matter. *Ammotium cassus, Ammobacu-lites dilitatus,* and *Eggerella advena,* are found in zones typical of high suspended particulate matter within the Baie des Chaleurs whereas the calcareous *Elphidium* group appear widespread and unaffected

by variation in living environments. Geochemical data compiled through X-Ray Fluorescence (XRF) complements work done by the Bedford Institute of Oceanography on pore water analysis. Scanning Electron Micrographs analyze benthic species to outline any structures and deformation characteristics associated through nearby effluent dumps, airborne particulate input and other sources of organic matter (OM). Implications of metal influence, populational ecology, and verification of remediation practices are all potential results that may be reached from this ongoing study.